

APCL Project: JPL

ATL #: 059557-001A/021A

APCL #:5612-1/21

T00



**Advanced Technology
Laboratories**

3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

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APCL #: 5612-1/21

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| | |
| | |



Advanced Technology
Laboratories

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3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Case Narrative

Client: Applied P & Ch Laboratory
Attn: Kenny Chan
Client's Project: JPL

ATL Number: 059557-001A/021A
Date Received: 10/29/02

Advanced Technology Laboratories received 1 water sample(s) for sample analysis. All receiving information is located on the Chain-of-Custody, which has been included in the data package.

Table's 1 describe in detail the individual sample information. Table 2 describes some important information associated with the sample batch.

Table 1: Sample Description

| Lab Sample ID | Client Sample ID | Sample Description | Matrix |
|---------------|------------------|--------------------|--------|
| 059557-001A | MW-12-3 | 5612-9 | Water |
| 059557-002A | MW-12-2 | 5612-8 | Water |
| 059557-003A | MW-12-1 | 5612-7 | Water |
| 059557-004A | ER-12 | 5612-1 | Water |
| 059557-005A | MW-11-3 | 5612-5 | Water |
| 059557-006A | MW-11-2 | 5612-4 | Water |
| 059557-007A | MW-11-1 | 5612-3 | Water |
| 059557-008A | MW-20-5 | 5612-14 | Water |
| 059557-009A | MW-20-4 | 5612-13 | Water |
| 059557-010A | MW-20-3 | 5612-12 | Water |
| 059557-011A | MW-20-2 | 5612-11 | Water |
| 059557-012A | MW-20-1 | 5612-10 | Water |
| 059557-013A | ER-20 | 5612-2 | Water |
| 059557-014A | ER-11 | 5612-16 | Water |
| 059557-015A | MW-23-4 | 5612-21 | Water |
| 059557-016A | MW-23-3 | 5612-20 | Water |
| 059557-017A | MW-23-3D | 5612-22 | Water |
| 059557-018A | MW-23-2 | 5612-19 | Water |
| 059557-019A | MW-23-1 | 5612-18 | Water |
| 059557-020A | ER-23 | 5612-17 | Water |
| 059557-021A | MW-11-3D | 5612-6 | Water |

Table 2: Sample Batch Information

| Test Name | Analysis Method | QC Batch Number | Associated Samples | Analysis Date |
|---------------|-----------------|-----------------|--------------------|---------------|
| ICP_MS Metals | EPA 200.8 | R22268 | 059557-001A /020A | 10/29/02 |
| ICP_MS Metals | EPA 200.8 | R22269 | 055580-021A | 02/29/02 |

ATL samples 059557-001A/021A did not require digestion. The Prep Date on the report is the analytical date of the turbidity check.

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Case Narrative (Page 1)
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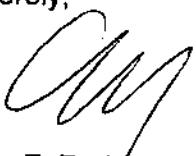
Table 3: QC Anomalies

| Item | Cause/Reason |
|-----------------|--|
| 059557-015A MSD | Percent recovery for matrix spike duplicated was outside the recovery limits. All other QC parameters are within acceptance limits, LCS validates the batch. |

The client requested a Level "D" data package requirement. The QC anomalies, which are listed in Table 3, appear to not have any significant impact on the analytical results. See cause and reasons for each anomaly that is listed in the table.

Thank you for the opportunity to service the needs of your company. Please feel free to call me at (562) 989-4045 if I can be of further assistance to your company.

Sincerely,



Eddie F. Rodriguez
Laboratory Director



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Case Narrative (Page 2)

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004

Data Qualifiers

Data Qualifiers are used in conjunction with the results in order to explain certain anomalies which may have occurred during sample analysis. If a result data qualifier is reported, then an explanation of the occurrence and the effects it has on the results must accompany the report.

The following table describes each data qualifier:

| Symbol | Definition |
|---------------|--|
| B | This flag is used when the analyte is found in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag shall be used for a tentatively identified compound as well as for a positively identified target compounds. |
| D | Duplicate injection precision not met. |
| E | The reported value is estimated because of interference. |
| J | This indicates an estimated value. This flag is used (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL but greater than zero, (3) when the retention time data indicate the presence of a compound that meets the pesticide/Aroclor identification criteria, and the result is less than the CRQL but greater than zero. |
| N | This flag indicated presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N flag is not used. |
| S | Spike sample recovery not within control limits. |
| SA | The reported value was determined by the Method of Standard Additions (MSA). |
| U | This flag indicates the compound was analyzed for but not detected. The CRQL shall be adjusted accordingly. |
| W | Post Digestion Spike for Furnace AA analysis is out of control limits (85% - 115%), while sample absorbance is less than 50% of spike absorbance. |
| X | This flag is used for a pesticide/Aroclor target analyte when there is grater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported and flagged with an X. |
| Y | This flag applies to pesticide results where the identification has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do not apply this flag. |
| P | Samples analyzed by ICP |
| PM | Samples analyzed by ICP_MS |
| CV | Samples analyzed by Manual Cold Vapor AA |
| CA | Samples analyzed by Midi-Distillation Spectrophotometer |
| SP | Samples analyzed by Spectrophotometer |
| TR | Samples analyzed by Infrared (TRPH) |
| AA | Samples analyzed by Flame, Atomic Absorption |
| M | Method Qualifier: Indicates the method by which each analyte is analyzed. |
| Q | Data Qualifier: Indicates any anomalies occurred during the QC sample analysis. |
| C | Concentration Qualifier: Indicates any effect on the reported value. |
| DLR | The DLR takes into account the dilution or concentration of the sample and is numerically defined as the MDL times the dilution or concentration factor. The dilution and concentration factors vary according to aliquot normally taken by the individual laboratory. |
| NC | Not calculated; at or near detection limit. |

005



Sample Receiving Items

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3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

APCL

Applied P & Ch Laboratory

13760 E. Magnolia Ave., Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Subcontract Chain of Custody

Please Print in pen
Page _____ of _____

To: Advanced Technology Laboratories Contact: Luis Fernando Tel: (562) 989 4045 Fax: (562) 989 4040

Address: 3275 Walnut Avenue City: Signal Hill State: CA Zip code: 90807

APCL Project Title/Code: JPL Sampler Sample disposition: Date: P.O. #:

Bill to (if different from above): APCL Quotation #: Date: 10/29/02

Due date regular rush Client signature Lab Contact: Henry Chang Date: 10/29/02

| Sample Description | Date Collected | Time | Matrix | Pres. | Filtered Y/N | Analysis items | Unit Price* | APCL Lab ID |
|--------------------|----------------|-------|--------|-------|--------------|----------------|-------------|-------------|
| MW-12-3 | 10/15/02 | 11:04 | W | HAD | N | | | 5612 -9 |
| MW-12-2 | | 11:32 | | | | | | -8 |
| MW-12-1 | | 12:00 | | | | | | -7 |
| EB-12 | | 11:05 | | | | | | -1 |
| MW-11-3 | 10/16/02 | 12:19 | | | | | | -5 |
| MW-11-2 | | 11:18 | | | | | | -4 |
| MW-11-1 | | 11:43 | | | | | | -3 |
| MW-20-5 | 10/17/02 | 09:17 | | | | | | -14 |
| MW-20-4 | | 09:59 | | | | | | -13 |
| MW-20-3 | | 10:37 | | | | | | -12 |
| MW-20-2 | | 11:06 | | | | | | -11 |
| MW-20-1 | | 11:32 | | | | | | -10 |
| ER-20 | | 10:38 | | | | | | -2 |
| ER-11 | 10/16/02 | 10:44 | | | | | | -16 |
| MW-23-4 | 10/21/02 | 0745 | | | | | | -21 |
| MW-23-3 | | 0838 | | | | | | -20 |
| MW-23-3D | | 0838 | | | | | | -22 |
| MW-23-2 | | 10:26 | | | | | | -19 |

Sample Conditions: Seal Intact Broken None; Temperature Cold Room; Other 11°C

Relinquished by HC Date/Time 10/29/02 10:44 Received by (initials) HC Date/Time 10/29/02 11:52

Relinquished by _____ Date/Time _____ Received by _____ Date/Time _____

Relinquished by _____ Date/Time _____ Received by _____ Date/Time _____

* APCL must be notified if unit price is incorrect.

APCL Applied Physics and Chemistry Laboratory

13760 Magnolia Avenue. Chino, CA 91710 TEL: (909)590-1828 FAX: (909)590-1498

FAX COVER

Date: 10/29/02 Service ID: _____

To: Puri Ronaldo

Company: ATL

Fax #: (562) 989 4040

From: Kenny Chan

Number of Pages in this transmittal including this cover page: 2

Subject: MS/MSD

Description: _____

Can you please add MS/MSD to sample.

MW-23-4 Thank you.

APCL

Applied P & Ch Laboratory

13760 E. Magnolia Ave., Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Subcontract Chain of Custody

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Page _____ of _____

To: Advanced Technology Laboratories Contact: Lori McDonald Tel: (562) 989-4045 Fax: (562) 989-4040

Address 3215 Walnut Avenue City Sigma/Hill State CA Zip code 90807

APCL Project Title/Code SPL Sample disposition: Date _____ client; APCL

Bill to (if different from above) APCL Quotation #: PO #

Due date regular rush

Client signature Lab Contact: Kenny Chan Date 10/29/02

Sample Description Date Time Collected Matrix Pres. Y/N Filtered Y/N Analysis items Unit Price* APCL Lab-ID

MW-12-3 10/5/02 1134 HNOS N

MW-12-2 1132

MW-12-1 1220

ER-12 1105

MW-11-3 104/02 1219

MW-11-2 1118

MW-11-1 1143

MW-20-5 10/1/02 0917

MW-20-4 0959

MW-20-3 1037

MW-20-2 1106

MW-20-1 1132

ER-20 1038

ER-11 104/02 1044

MW-23-4 10/22/02 0745

MW-23-3 0838

MW-23-30 0838

MW-23-2 1026

APCL

Applied P & Ch Laboratory

13760 E. Magnolia Ave., Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Subcontract Chain of Custody

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Page 1 of 1

To: Advanced Technology Laboratories Contact Pat Romaldo Tel: (562) 989-4045 Fax: (562) 989-4040
Address 3275 Walnut Avenue City Sigona Hill State CA Zip code 90807
APCL Project Title/Code JPL
Bill to (if different from above) APCL
Due date Regular rush

Quotation # 059652 Client signature Lab Contact: Haining Chang Date 10/29/02

| Sample Description | Date Collected | Time | Matrix | Pres. | Y/N | Filtered | Analysis items | Unit Price* | APCL Lab ID |
|--------------------|----------------|-------|--------|------------------|-----|----------|----------------|-------------|-------------|
| 1 MW-12-3 | 10/5/02 | 11:04 | W | HNO ₃ | N | | | \$612 | -9 |
| 2 MW-12-2 | | 11:32 | | | | | | | -8 |
| 3 MW-12-1 | | 12:30 | | | | | | | -7 |
| 4 ER-12 | | 1:05 | | | | | | | -1 |
| 5 MW-11-3 | 10/6/02 | 12:19 | | | | | | | -5 |
| 6 MW-11-2 | | 1:18 | | | | | | | -4 |
| 7 MW-11-1 | | 1:43 | | | | | | | -3 |
| 8 MW-20-5 | 10/17/02 | 09:17 | | | | | | | -14 |
| 9 MW-20-4 | | 09:59 | | | | | | | -13 |
| 10 MW-20-3 | | 10:37 | | | | | | | -12 |
| 11 MW-20-2 | | 11:06 | | | | | | | -11 |
| 12 MW-20-1 | | 11:32 | | | | | | | -10 |
| 13 ER-20 | | 10:38 | | | | | | | -2 |
| 14 ER-11 | 10/6/02 | 10:44 | | | | | | | -16 |
| 15 MW-23-4 | 10/22/02 | 0745 | | | | | | | -21 |
| 16 MW-23-3 | | 0838 | | | | | | | -20 |
| 17 MW-23-30 | | 0838 | | | | | | | -22 |
| 18 MW-23-2 | | 10:26 | | | | | | | -19 |

Sample Conditions: Seal Intact Broken None; Temperature Cold Room; Other 1.1°C

| | | | |
|-----------------------------|----------------------------------|--------------------------------|---------------------------------|
| Relinquished by <u>APCL</u> | Date/Time <u>10/29/02 10:04A</u> | Received by <u>Pat Romaldo</u> | Date/Time <u>10/29/02 11:52</u> |
| Relinquished by | Date/Time | Received by | Date/Time |
| Relinquished by | Date/Time | Received by | Date/Time |
| Relinquished by | Date/Time | Received by | Date/Time |

* APCL must be notified if unit price is incorrect.

APCL

Applied P & Ch Laboratory

13760 E. Magnolia Ave., Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Subcontract Chain of Custody

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Page _____ of _____

TO: Advanced Technology Laboratories Contact: Pur. Komualdo Tel: (562) 989-4045 Fax: (562) 989-4040
Address: 3275 Belmont Avenue City: Signal Hill State: CA Zip code: 90807

APCL Project Title/Code: TPL Sampler Sample disposition: Date: client: APCL

Bill to (if different from above): APCL Quotation #: P.O.#:

Due date: regular rush Client signature: Lab Contact: Kenny Chan Date: 10/29/02

Sample Description Date Time Collected Matrix Pres. Y/N Filtered Y/N Analysis items Unit Price* APCL Lab ID

| | | | | | | | | |
|------------|----------|----------|-------|------------------|---|-------------------|--|---------|
| 1 MU-23-1 | 10/24/02 | 10:36 | W | HNO ₃ | N | Total Cr. by 2008 | | 5612-18 |
| 2 ER-23 | | ↓ | 06:53 | | | With EDD Level | | -17 |
| 2 MU-11-3D | 10/14/02 | 10:44:19 | K.C. | ↓ | ↓ | 4 Package | | 6 |

Sample Conditions: Seal Intact Broken None; Temperature Cold Room; Other

Relinquished by: J. Hoss Date/Time: 10/29/02 Received by: Christina Aguirre Date/Time: 10/29/02

Relinquished by: C. Hoss Date/Time: Received by: Date/Time: 10/29/02 10:52

Relinquished by: C. Hoss Date/Time: Received by: Date/Time: 10/29/02 10:52

* APCL must be notified if unit price is incorrect.

INORGANICS COMPLETE INVENTORY SHEET

Client: Applied P & Ch Laboratory
Attn: Kenny Chan
Client's Project: JPL

Laboratory Name: Advanced Technology Laboratories
Laboratory Address: 3275 Walnut Avenue, Signal Hill, CA 90807

ATL Number: 059557-001A/021A
Date Sampled: 10/15/02
Date Received: 10/29/02

Method 200.8 (Metals)

| | Topic | Page(s) |
|---------------------|--|---------|
| Sample Data | Inorganic Data Result Sheet | 013-033 |
| Standards Data | Initial Calibration | 036 |
| | Initial Calibration Verification and Continuing Calibration Verification/External Reference Standard | 037-038 |
| | Tune File | 039-041 |
| | Internal Standard Table | 042-043 |
| Raw QC Data | Blank Report Sheet | 044-045 |
| | Spike Sample Recovery | 046-047 |
| | Laboratory Control Spike Report | 048-049 |
| | Duplicate Report Sheet | 050-052 |
| | Holding Times Summary Sheet | 053 |
| Miscellaneous Items | Preparation Log | 055-056 |
| | Analysis Run Log | 057 |
| | Standards Log | 058-065 |
| | List of Method Detection Limits | 066 |
| Raw Data Package | Standards Data Sample Data QC Data | 067-116 |

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Advanced Technology
Laboratories

3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-001A

Client Sample ID: MW-12-3**Collection Date:** 10/15/2002 11:04:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|------------------|-----|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 2.5 | 1.0 | μg/L | 1 | 10/29/2002 |

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interference
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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Advanced Technology
Laboratories

3275 Walnut Avenue 2 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories**Client Sample ID:** MW-12-2**Lab Order:** 059557**Project:** JPL**Collection Date:** 10/15/2002 11:32:00 AM**Lab ID:** 059557-002A**Matrix:** WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|------------------|-----|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 2.8 | 1.0 | µg/L | 1 | 10/29/2002 |

| | | |
|--------------------|--|---|
| Qualifiers: | ND - Not Detected at the Reporting Limit | B - Analyte detected in the associated Method Blank |
| | J - Analyte detected below quantitation limits | DO - Surrogate Diluted Out |

| |
|--|
| S - Spike/Surrogate outside of limits due to matrix interference |
| H - Sample exceeded analytical holding time |
| E - Value above quantitation range |
| Results are wet unless otherwise specified |

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Advanced Technology
Laboratories

3275 Walnut Avenue 3 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories

Client Sample ID: MW-12-1

Lab Order: 059557

Project: JPL

Collection Date: 10/15/2002 12:00:00 PM

Lab ID: 059557-003A

Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS

EPA 200.8

| | | | | | |
|---------------------|------------------|-----|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 2.4 | 1.0 | µg/L | 1 | 10/29/2002 |

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interference
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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3275 Walnut Avenue 4 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories

Client Sample ID: ER-12

Lab Order: 059557

Project: JPL

Collection Date: 10/15/2002 11:05:00 AM

Lab ID: 059557-004A

Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS

EPA 200.8

| | | | | | |
|---------------------|------------------|-----|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | ND | 1.0 | µg/L | 1 | 10/29/2002 |

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interference
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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Advanced Technology
Laboratories

3275 Walnut Avenue 5 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-005A

Client Sample ID: MW-11-3**Collection Date:** 10/16/2002 10:19:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|------------------|-----|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 2.0 | 1.0 | μg/L | 1 | 10/29/2002 |

| | | |
|--------------------|---|--|
| Qualifiers: | ND - Not Detected at the Reporting Limit | S - Spike/Surrogate outside of limits due to matrix interference |
| | J - Analyte detected below quantitation limits | H - Sample exceeded analytical holding time |
| | B - Analyte detected in the associated Method Blank | E - Value above quantitation range |
| | DO - Surrogate Diluted Out | Results are wet unless otherwise specified |

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Advanced Technology
Laboratories

3275 Walnut Avenue 650f, 24 Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories**Client Sample ID:** MW-11-2**Lab Order:** 059557**Project:** JPL**Collection Date:** 10/16/2002 11:18:00 AM**Lab ID:** 059557-006A**Matrix:** WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|-----------------|---------------|--------------|-------------|--------------|-----------|----------------------|
|-----------------|---------------|--------------|-------------|--------------|-----------|----------------------|

ICP-MS METALS**EPA 200.8**

| | | | | | | |
|---------------------|------------------|-----|--|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | | Analyst: NS |
| Chromium | 1.9 | 1.0 | | µg/L | 1 | 10/29/2002 |

| | | |
|--------------------|---|--|
| Qualifiers: | ND - Not Detected at the Reporting Limit | S - Spike/Surrogate outside of limits due to matrix interference |
| | J - Analyte detected below quantitation limits | H - Sample exceeded analytical holding time |
| | B - Analyte detected in the associated Method Blank | E - Value above quantitation range |
| | DO - Surrogate Diluted Out | Results are wet unless otherwise specified |

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Advanced Technology
Laboratories

3275 Walnut Avenue 7 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557

Client Sample ID: MW-11-1

Project: JPL

Collection Date: 10/16/2002 11:43:00 AM

Lab ID: 059557-007A

Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS

EPA 200.8

| | | | | | |
|---------------------|------------------|-----|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 2.5 | 1.0 | µg/L | 1 | 10/29/2002 |

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interference
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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Advanced Technology
Laboratories

3275 Walnut Avenue 8 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories

Client Sample ID: MW-20-5

Lab Order: 059557

Project: JPL

Collection Date: 10/17/2002 9:17:00 AM

Lab ID: 059557-008A

Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS

EPA 200.8

| | | | | | |
|---------------------|------------------|-----|--|------|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 1.5 | 1.0 | | µg/L | 1 |
| | | | | | 10/29/2002 |

| | | |
|-------------|---|---|
| Qualifiers: | ND - Not Detected at the Reporting Limit J - Analyte detected below quantitation limits B - Analyte detected in the associated Method Blank DO - Surrogate Diluted Out | S - Spike/Surrogate outside of limits due to matrix interference H - Sample exceeded analytical holding time E - Value above quantitation range Results are wet unless otherwise specified |
|-------------|---|---|

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Advanced Technology
Laboratories

3275 Walnut Avenue 9 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-009A

Client Sample ID: MW-20-4**Collection Date:** 10/17/2002 9:59:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|------------------|-----|--|------|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 1.3 | 1.0 | | µg/L | 1 |
| | | | | | 10/29/2002 |

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interference
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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Advanced Technology
Laboratories

3275 Walnut Avenue 10 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

021

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories**Client Sample ID:** MW-20-3**Lab Order:** 059557**Project:** JPL**Collection Date:** 10/17/2002 10:37:00 AM**Lab ID:** 059557-010A**Matrix:** WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|------------------|-----|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 2.5 | 1.0 | µg/L | 1 | 10/29/2002 |

| | | | | |
|--------------------|--|--|---|----------------------------|
| Qualifiers: | ND - Not Detected at the Reporting Limit | B - Analyte detected below quantitation limits | B - Analyte detected in the associated Method Blank | DO - Surrogate Diluted Out |
|--------------------|--|--|---|----------------------------|

S - Spike/Surrogate outside of limits due to matrix interference

H - Sample exceeded analytical holding time

E - Value above quantitation range

Results are wet unless otherwise specified

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*Advanced Technology
Laboratories*

3275 Walnut Avenue 11 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories

Client Sample ID: MW-20-2

Lab Order: 059557

Project: JPL

Collection Date: 10/17/2002 11:06:00 AM

Lab ID: 059557-011A

Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS

EPA 200.8

| | | | | | |
|---------------------|------------------|-----|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 1.6 | 1.0 | µg/L | 1 | 10/29/2002 |

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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023



Advanced Technology
Laboratories

3275 Walnut Avenue 12th fl Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories**Date:** 29-Jan-03

CLIENT: Applied P & Ch Laboratories **Client Sample ID:** MW-20-1
Lab Order: 059557**Project:** JPL **Collection Date:** 10/17/2002 11:32:00 AM
Lab ID: 059557-012A **Matrix:** WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|-----------------|---------------|--------------|-------------|--------------|-----------|----------------------|
|-----------------|---------------|--------------|-------------|--------------|-----------|----------------------|

ICP-MS METALS**EPA 200.8**

| | | | | | | |
|---------------------|------------------|-----|--|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | | Analyst: NS |
| Chromium | 2.3 | 1.0 | | µg/L | 1 | 10/29/2002 |

| | | |
|--------------------|---|--|
| Qualifiers: | ND - Not Detected at the Reporting Limit | S - Spike/Surrogate outside of limits due to matrix interference |
| | J - Analyte detected below quantitation limits | H - Sample exceeded analytical holding time |
| | B - Analyte detected in the associated Method Blank | E - Value above quantitation range |
| | DO - Surrogate Diluted Out | Results are wet unless otherwise specified |

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Advanced Technology
Laboratories3275 Walnut Avenue 13th floor Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-013A

Client Sample ID: ER-20

Collection Date: 10/17/2002 10:38:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS

EPA 200.8

| | | | | | |
|---------------------|------------------|-----|--|------|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | ND | 1.0 | | µg/L | 1 |
| | | | | | 10/29/2002 |

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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Advanced Technology
Laboratories

3275 Walnut Avenue 14th floor, Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

| | | | |
|-------------------|-----------------------------|--------------------------|------------------------|
| CLIENT: | Applied P & Ch Laboratories | Client Sample ID: | ER-11 |
| Lab Order: | 059557 | Collection Date: | 10/16/2002 10:44:00 AM |
| Project: | JPL | Matrix: | WATER |
| Lab ID: | 059557-014A | | |

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|-----------|--------|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: | R22268 | | | Analyst: NS |
| Chromium | ND | 1.0 | µg/L | 1 | 10/29/2002 |

| | | |
|--------------------|---|--|
| Qualifiers: | ND - Not Detected at the Reporting Limit | S - Spike/Surrogate outside of limits due to matrix interferen |
| | J - Analyte detected below quantitation limits | H - Sample exceeded analytical holding time |
| | B - Analyte detected in the associated Method Blank | E - Value above quantitation range |
| | DO - Surrogate Diluted Out | Results are wet unless otherwise specified |

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Advanced Technology
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Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-015A

Client Sample ID: MW-23-4**Collection Date:** 10/22/2002 7:45:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|------------------|-----|--|------|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 2.5 | 1.0 | | µg/L | 1 |
| | | | | | 10/29/2002 |

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interference
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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Advanced Technology
Laboratories

3275 Walnut Avenue 16 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-016A

Client Sample ID: MW-23-3

Collection Date: 10/22/2002 8:38:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS

EPA 200.8

| | | | | | |
|---------------------|------------------|-----|--|------|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 4.1 | 1.0 | | µg/L | 1 |
| | | | | | 10/29/2002 |

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interference
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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Advanced Technology
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Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-017A

Client Sample ID: MW-23-3D**Collection Date:** 10/22/2002 8:38:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | | |
|---------------------|------------------|-----|--|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | | Analyst: NS |
| Chromium | 3.9 | 1.0 | | µg/L | 1 | 10/29/2002 |

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interference
J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank E - Value above quantitation range
DO - Surrogate Diluted Out Results are wet unless otherwise specified

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Advanced Technology
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3275 Walnut Avenue 18 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-018A

Client Sample ID: MW-23-2**Collection Date:** 10/22/2002 10:26:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|------------------|-----|--|------|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 3.4 | 1.0 | | µg/L | ↑ |
| | | | | | 10/29/2002 |

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interference
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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030

*Advanced Technology
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3275 Walnut Avenue 19 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories
Lab Order: 059557
Project: JPL
Lab ID: 059557-019A

Client Sample ID: MW-23-1**Collection Date:** 10/22/2002 10:56:00 AM
Matrix: WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | |
|---------------------|------------------|-----|--|------|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | Analyst: NS |
| Chromium | 3.9 | 1.0 | | µg/L | 1 |
| | | | | | 10/29/2002 |

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
Results are wet unless otherwise specified

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Advanced Technology
Laboratories

3275 Walnut Avenue 20 of 24 Sigh Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories**Client Sample ID:** ER-23**Lab Order:** 059557**Project:** JPL**Collection Date:** 10/22/2002 6:53:00 AM**Lab ID:** 059557-020A**Matrix:** WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|-----------------|---------------|--------------|-------------|--------------|-----------|----------------------|
|-----------------|---------------|--------------|-------------|--------------|-----------|----------------------|

ICP-MS METALS**EPA 200.8**

| | | | | | | |
|---------------------|------------------|-----|--|------|---|-------------|
| RunID: ICP4_021029A | QC Batch: R22268 | | | | | Analyst: NS |
| Chromium | ND | 1.0 | | µg/L | 1 | 10/29/2002 |

| | | |
|--------------------|--|---|
| Qualifiers: | ND - Not Detected at the Reporting Limit | B - Analyte detected in the associated Method Blank |
| | J - Analyte detected below quantitation limits | DO - Surrogate Diluted Out |

| |
|--|
| S - Spike/Surrogate outside of limits due to matrix interference |
| H - Sample exceeded analytical holding time |
| E - Value above quantitation range |
| Results are wet unless otherwise specified |

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Advanced Technology
Laboratories3275 Walnut Avenue 21st of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: 29-Jan-03

CLIENT: Applied P & Ch Laboratories**Client Sample ID:** MW-11-3D**Lab Order:** 059557**Project:** JPL**Collection Date:** 10/16/2002 10:19:00 AM**Lab ID:** 059557-021A**Matrix:** WATER

| Analyses | Result | Limit | Qual | Units | DF | Date Analyzed |
|----------|--------|-------|------|-------|----|---------------|
|----------|--------|-------|------|-------|----|---------------|

ICP-MS METALS**EPA 200.8**

| | | | | | | |
|---------------------|------------------|-----|-----|------|---|-------------|
| RunID: ICP4_021029B | QC Batch: R22269 | | | | | Analyst: NS |
| Chromium | | 1.7 | 1.0 | µg/L | 1 | 10/29/2002 |

| | | |
|--------------------|--|---|
| Qualifiers: | ND - Not Detected at the Reporting Limit | B - Analyte detected in the associated Method Blank |
| | J - Analyte detected below quantitation limits | D - Surrogate Diluted Out |
| | S - Spike/Surrogate outside of limits due to matrix interference | H - Sample exceeded analytical holding time |
| | E - Value above quantitation range | |

| | |
|--|---------------|
| S - Spike/Surrogate outside of limits due to matrix interference | |
| H - Sample exceeded analytical holding time | |
| E - Value above quantitation range | |
| Results are wet unless otherwise specified | Page 21 of 21 |

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3275 Walnut Avenue 22 of 24 Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040